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Physoderma (zeæ-maydis?) in Kansas.

L. E. Melchers.

The writer collected specimens of *Physoderma* (*zeæ-maydis?*) on Zea mays at Manhattan, Kan., in October, 1915, in a field of corn which was being used for experimental purposes. Although it was strongly suspected that the fungus was *Physoderma,* it was not definitely determined until sometime later. Comparing this date of collection with that of other collections made up to that time in the United States, it appears that the discovery of this fungus in 1915 made the report the third in the United States. Since then, however, it has been located in numerous other states, particularly since the United States department of agriculture began its survey of this disease in 1917.

How long *Physoderma* has been in Kansas is not known, but the writer believes probably prior to 1913. Its presence in traces could easily escape attention. Its appearance in 1915 attracted notice and numerous collections were made. No specimens were found in 1916, but in 1917 it was again found and collected. It appeared in very limited quantities, at this time in May, in the vicinity of Manhattan, when a few specimens were collected. In October considerable specimens were located in the vicinity of Manhattan. Prof. G. W. Wilson visited Manhattan in October of 1917, and at that time was connected with a survey of this fungus in the employ of the United States Department of Agriculture. The writer is indebted to him for much of the data furnished in 1917. Up to the present date, *Physoderma* has been located in Kansas in the following places: In the Neosho bottoms in the vicinity of Chetopa, particularly to the east in the river bottoms, considerable amounts were located, and this likewise holds true for the Iola region. A trace was found at Fort Scott. It also occurred in slight amounts at Garnett, Ottawa and Marysville. At the latter place, one field contained considerable of the fungus. In Manhattan, the percentage ran higher than any place in the state as far as known. Here it did not only occur on the leaves and sheaths of the corn plant, but it was actually penetrating the nodes. The vicinities of Parsons, Independence, Lawrence and Emporia were visited, but no trace of the fungus was located.

The symptoms of the fungus in the early stage are rather difficult to distinguish from injury caused by Aphids. Blackened, irregular spots, or blotches may occur on the sheaths or main ribs of the leaves of the corn plant. Later in the development of the fungus, and as the host matures, these spots begin to rupture and expose a powdery, dark, reddish-brown mass of spores. The ruptures are irregular and may vary from a few to many millimeters in length. A shredded condition at the base of the leaves is not uncommon; in fact, this is one of the striking characteristics of the fungus. When the nodes of the corn plant are attacked and penetrated by this fungus, the infected regions show a more or less shrunken condition.

THE IMPORTANCE OF THIS FUNGUS IN KANSAS.

It is difficult to state of what economic importance this disease will prove to be in Kansas. In some of the southeastern states it is causing considerable damage. The important factors involved, as far as this state is concerned, are, that *Physoderma* occurs in Kansas, and indications are that it can live over as far north as this region. Further investigations of this disease in the state will be made.

In our scheme of classification, this fungus is placed in the order, *Chytridiales;* sub-order, *Mycochytridiineæ;* family, *Cladochytriaceæ,* along with such genera as *Urophlyctis, Cladochytrium,* etc.

Class. *Archemycetæ.*
  Ord. *Chytridiales.*
    Sub. ord. *Mycochytridiineæ.*
      Fam. *Cladochytriaceæ.*
        Genus. *Physoderma.*

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Plant Disease Report for Kansas, 1917.

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CEREAL DISEASES.

Bunt of Wheat. *Tilletia fœtens* B. & C. Among the wheat diseases occurring in 1917, bunt was given more attention than usual. This was made possible in connection with the seed survey situation of the state. The counties where bunt was located in greater or less quantities were Reno, Stafford, Rice, Pratt, Harper, Dickinson, Barber, Norton, Chase, McPherson and Sumner. The majority of fields that showed the presence of bunt contained from two to five per cent, but many showed as high as twenty-five per cent.

Loose Smut of Wheat. *Ustilago tritici* (Pers.) Jens. This smut is more commonly and widely distributed over the state than bunt, but always appears in much smaller quantities. Generally from a trace (less than one-fourth per cent) to one and one-half per cent loose smut can be found in the great majority of wheat fields in Kansas. Occasionally a field has been found to contain as high as twenty-five per cent infection, but this is rare.

Black Chaff and Stem Disease of Wheat. *Bacterial.* The disease here described seems to be causally bacterial, although further work is necessary to prove the entire life history of the disease in question. This disease was given its common name by the writer in 1915. It was under experimentation by the writer in 1914, but the first newspaper article was published in 1915. Since this disease has been under observation, it was the worst in 1915. At that time excessive rains and the humid atmosphere made it favorable for its maximum development. Apparently this trouble has been most conspicuous in this state, at least as far as the "neck," head and glume infection is concerned. The blackened areas on the "neck" of the wheat plants, together with the spots or stripes of